

AMENDMENTS TO THE CLAIMS:

The following listing of claims will replace all prior versions and listings of claims in the captioned application.

Listing of Claims:

CLAIMS

Claim 1. (Previously Presented) A shaped charge booster assembly comprising a casement having a primer path and a main cavity, said primer path being charged with an explosive material having a first density to link said main cavity with a booster ignition point, said main cavity being charged with an explosive material having a second density wherein said first density is less than said second density, an enclosure wall of said main cavity substantially opposite of said primer path being formed by an end plug.

Claim 2. (Previously Presented) A shaped charge booster assembly as described by claim 1 wherein an enclosure wall of said main cavity that is disposed substantially opposite of said primer path is formed by an end plug said first density is less than said second density.

Claim 3. (Previously Presented) A shaped charge booster assembly as described by claim 1 2 wherein said first density is about 1.1 g/cc to about 1.2 g/cc.

Claim 4. (Previously Presented) A shaped charge booster assembly as described by claim 1 2 wherein said second density is about 1.5 g/cc to about 1.6 g/cc.

Claim 5. (Previously Presented) A shaped charge booster assembly comprising
a casement having a primer path and a main cavity, said primer path being charged
with an explosive material having a first density to link said main cavity with a booster
ignition point, said main cavity being charged with an explosive material having a
second density wherein said first density is less than said second density and a as
described by claim 1 wherein casement wall thickness surrounding said primer path is
substantially greater than a casement wall thickness surrounding said main cavity.

Claim 6. (Previously Presented) A shaped charge booster assembly comprising
a casement having a primer path and a main cavity as described by claim 1 wherein
said casement comprises a substantial cylinder of non-ferrous metal, said primer path
comprising an axial bore of about 0.045" to about 0.080" and said main cavity
comprising comprises an axial bore encompassed by a casement wall less than about
0.010" thick, said primer path being charged with an explosive material having a first
density and said main cavity being charged with an explosive material having a greater,
second density.

Claim 7. (Previously Presented) A shaped charge booster assembly as
described by claim 6 wherein the casement wall encompassing said primer path is
about 0.080" to about
0.100" thick.

Claim 8. (Original) A shaped charge booster assembly as described by claim 6
Wherein explosive material within said primer path bore is charged with a density of
about 1.1 to about 1.2 g/cc and explosive material in said main cavity is charged with a
density of about 1.5 to about 1.6 g/cc.

Claim 9. (Previously Presented) A shaped charge booster assembly comprising a casement having a primer path circumscribed by a first casement wall thickness, said primer path opening into a main cavity circumscribed by a second casement wall thickness that is less than said first wall thickness, said primer path and main cavity being respectively charged with explosive material, the explosive material charge in said primer path providing sufficient energy to detonate the explosive material in said main cavity but insufficient energy to propagate detonation of explosive material externally surrounding said first casement wall.

Claim 10. (Previously Presented) A shaped charge booster assembly comprising a casement having a primer path circumscribed by a first casement wall thickness, said primer path opening into a main cavity circumscribed by a second casement wall thickness that is less than said first wall thickness, said primer path and main cavity being respectively charged with explosive material, as described by claim 9 wherein the explosive material density in said primer path being is less than the explosive material density in said main cavity.

Claim 11. (Original) A shaped charge booster assembly as described by claim 10 wherein said primer path material density is about 1.1 g/cc to about 1.2 g/cc.

Claim 12. (Original) A shaped charge booster assembly as described by claim 10 wherein said main cavity material density is about 1.5 g/cc to about 1.6 g/cc.

Claim 13. (Previously Presented) A shaped charge booster assembly as described by claim 10 9 wherein the first casement wall thickness is about 0.080" to about 0.100".

Claim 14. (Previously Presented) A shaped charge booster assembly as described by claim 10 9 wherein said second casement wall thickness is less than about 0.010".

Claim 15. (Previously Presented) A shaped charge tubing cutter comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into a substantial cone having a normally truncated apex, said units being joined coaxially at said truncated apex along a substantially common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, conical surface elements of said units being clad with a liner that comprises a mixture that includes powdered metal liner comprising a mixture of tungsten, copper and/or lead.

Claim 16. (Previously Presented) A shaped charge tubing cutter comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into a substantial cone having a normally truncated apex, said units being joined coaxially at said truncated apex along a substantially common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, conical surface elements of said units being clad with a liner that comprises a mixture that includes powdered tungsten, copper and/or lead, as described by claim 15 wherein said explosive units being are substantially separated from adjacent housing structure at opposite axial ends by spacer elements.

Claim 17. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into a substantial cone having a normally truncated apex, said units being joined coaxially at said truncated apex along a substantially common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said explosive units being enclosed by a housing having a fluid tight assembly with a top tool sub, said housing having a jet window perimetrical adjacent conical surface elements, said jet window comprising a pair of inside wall channels turned into inside housing walls, opposite radial side walls of said channels being substantially symmetric about said juncture plane.

Claim 18. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into a substantial cone having a normally truncated apex, said units being joined coaxially at said truncated apex along a substantially common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said explosive units being enclosed by a housing having a fluid tight assembly with a top tool sub, said housing having a jet window perimetrically adjacent conical surface elements respective to said explosive units, said jet window comprising a pair of inside wall channels turned into inside housing walls, opposite radial side walls of said channels being substantially symmetric about said juncture plane wherein radial side walls respective to one channel of said pair substantially align with conical base planes respective to said explosive units.

Claim 19. (Previously Presented) A shaped charge tubing cutter as described by claim 15 comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into a substantial cone having a normally truncated apex, said units being joined coaxially at said truncated apex along a substantially common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, conical surface elements of said units being clad with a liner that comprises a mixture that includes powdered tungsten, copper and/or lead and wherein a the copper and lead constituency of said mixture comprises about 80% copper.

Claim 20. (Previously Presented) A shaped charge tubing cutter as described by claim 15 comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into a substantial cone having a normally truncated apex, said units being joined coaxially at said truncated apex along a substantially common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, conical surface elements of said units being clad with a liner that comprises a mixture that includes powdered tungsten, copper and/or lead and wherein a the copper and lead constituency of said mixture comprises about 20% lead.

Claim 21. (Previously Presented) A shaped charge tubing cutter as described by claim 15 comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into a substantial cone having a normally truncated apex, said units being joined coaxially at said truncated apex along a substantially common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, conical surface elements of said units being clad with a liner that comprises a mixture that includes powdered tungsten, copper and/or lead and wherein said powdered metal liner comprises about 80+% tungsten.

Claim 22. (Previously Presented) A shaped charge tubing cutter comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into substantial cones having a normally truncated apex, said cones being joined coaxially at said truncated apex along a common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said explosive units being encased within a substantially cylindrical housing having circumferential lines of structural weakness in an external surface of said housing adjacent extended base planes lines of said cones.

Claim 23. (Previously Presented) A shaped charge tubing cutter as described by claim 22 comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into substantial cones having a normally truncated apex, said cones being joined coaxially at said truncated apex along a common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said explosive units being encased within a substantially cylindrical housing having wherein said housing comprises an internal jet window between conical base planes of said explosive units, said lines of structural weakness, said jet window comprising at least a pair of circumferential channels about a cylindrical interior wall of said housing, one of said channels having a greater inside diameter than the other and the other of said channels having a greater axial length between substantially radial sidewalls, said one channel being disposed between the sidewalls of said other channel.

Claim 24. (Previously Presented) A shaped charge tubing cutter as described by claim 22 comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into substantial cones having a normally truncated apex, said cones being joined coaxially at said truncated apex along a common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said explosive units being encased within a substantially cylindrical housing, wherein said housing being is secured to a substantially cylindrical top sub, said top sub having a substantially axial aperture aligned with the axis of revolution of said explosive units for receipt of a detonator, said axial aperture having at least one lateral pressure vent.

Claim 25. (Previously Presented) A shaped charge tubing cutter as described by claim 22 comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into substantial cones having a normally truncated apex, said cones being joined coaxially at said truncated apex along a common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said explosive units being encased within a substantially cylindrical housing, wherein said cylindrical housing comprising comprises a tool centralizer secured to a closed distal end of said housing, said centralizer comprising a plurality of substantially flat spring blades.

Claim 26. (Previously Presented) A shaped charge tubing cutter as described by claim 22 comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into substantial cones having a normally truncated apex, said cones being joined coaxially at said truncated apex along a common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said explosive units being encased within a substantially cylindrical housing having resilient centralizer arms extending axially from a position on said housing that permits said arms to wherein said centralizer is secured to an axially projected salient of said housing whereby said centralizer blades may flex without engaging circumferential housing structure.

Claim 27. (Original) A shaped charge tubing cutter comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into substantial cones having a normally truncated apex, said cones being joined coaxially at said truncated apex along a common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said explosive units being suspended within a substantially cylindrical housing between opposing walls to provide a substantial void space between each of said walls and said units of about 0.100" or more.

Claim 28. (Previously Presented) A shaped charge tubing cutter as described by claim 27 comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into substantial cones having a normally truncated apex, said cones being joined coaxially at said truncated apex along a common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said explosive units being encased within a substantially cylindrical, frangible steel housing having circumferential lines of structural weakness in an external surface of said housing adjacent extended base planes of said cones, said housing having a Rockwell "C" hardness of about 55-60 wherein said explosive units are separated from said said opposing walls by spacer elements.

Claim 29. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into substantial cones having substantially normal base planes and truncated apices a normally truncated apex, said cones being joined coaxially at said truncated apices apex along a common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said explosive units being suspended within a substantially cylindrical housing between opposing walls within a substantially cylindrical housing to provide a substantial void space between each of said walls and a thrust disc disposed substantially co-planar with at least one of said cone base planes for aligning said explosive units substantially co-axially within said cylindrical housing and cone bases respective to the explosive unit cones including metallic end plates for confining and directing explosive energy.

Claim 30. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into substantial cones having a normally truncated apex, said cones being joined coaxially at said truncated apex along a common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said explosive units further comprising metallic end plates for confining and directing explosive energy, base planes of said end plates being resiliently suspended within a substantially cylindrical housing between opposing transverse walls and from adjacent housing walls by at least about 0.100" to provide a substantial void space between each of said walls.